

IN THE CLAIMS

1. (Previously Presented) A resilient packet ring (RPR) network system in a RPR network, comprising:

a plurality of station nodes terminating media access control (MAC) frames; and

a plurality of bridge nodes forwarding MAC frames, in which both of the plurality of station nodes and the plurality of bridge nodes are located in one or more ringlets,

wherein each of the station nodes, in the case of transmitting a MAC frame to other station node, transmits a RPR MAC frame in which a MAC address of the other station node is set as a destination MAC address, and transmits, in the case of transmitting a MAC frame to a station accommodated to a bridge node and located in the outside of the ringlets, a RPR MAC frame into which the MAC frame is encapsulated in such a state that the bridge node can capture the MAC frame,

each of the bridge nodes, in the case of receiving, from a station accommodated to the bridge node itself and located in the outside of the ringlets, the MAC frame in which a MAC address of a station accommodated to other bridge node and located in the outside of the ringlets is set as a destination address, transmits a RPR MAC frame into which the MAC frame is encapsulated in such a state that the other bridge node can capture the RPR MAC frame, and, in the case of receiving, from a station accommodated to the bridge node itself, a MAC frame in which a MAC address of a station node is set as a destination MAC address, converts the MAC frame into a RPR MAC frame and transmits the RPR MAC frame,

each of the station nodes captures the RPR MAC frame that the MAC frame is not encapsulated, and

each of the bridge nodes captures the RPR MAC frame into which the MAC frame is encapsulated, and transmits the MAC frame within the captured RPR MAC frame to a station accommodated to the bridge node itself and located in the outside of the ringlets.

2. (Original) A RPR network system according to claim 1, wherein each of the station nodes and each of the bridge nodes have a table registered with the MAC addresses of all the station nodes and bridge nodes connected to the ringlets,

each of the station nodes, in the case of transmitting a MAC frame, converts the MAC frame into a RPR MAC format and transmits the RPR MAC frame if a destination MAC address of the MAC frame is registered in the table, and transmits a RPR MAC frame into which the MAC frame is encapsulated if the destination MAC address is not registered in the table, and

each of the bridge nodes, in the case of forwarding a MAC frame received from a station accommodated to the bridge node itself and located in the outside of the ringlets, transmits the MAC frame converted into a RPR MAC frame format if a destination MAC address of the MAC frame is registered in the table, and transmits a RPR MAC frame into which the MAC frame is encapsulated if the destination MAC address is not registered in the table.

3. (Original) A RPR network system according to claim 2, wherein each of the station nodes and each of the bridge nodes have a mapping table stored with correspondence between a MAC address of each bridge node and a MAC address of a station accommodated to each bridge node and located in the outside of the ringlets, and

each of the station nodes and each of the bridge nodes, in the case of transmitting a RPR MAC frame into which a MAC frame is encapsulated, if a MAC address of a bridge node

corresponding to a destination MAC address of the MAC frame is stored in the mapping table, set the MAC address of the bridge node for a destination MAC address of the RPR MAC frame.

4. (Original) A RPR network system according to claim 3, wherein each of the station nodes and each of the bridge nodes retain a multicast address that all the bridge nodes belong to a group of the multicast address, and

each of the station nodes and each of the bridge nodes, in the case of transmitting a RPR MAC frame into which a MAC frame is encapsulated, if a MAC address of a bridge node corresponding to a destination MAC address of the MAC frame is not stored in the mapping table, set the multicast address for a destination MAC address of the RPR MAC frame.

5. (Original) A RPR network system according to claim 3, wherein each of the bridge nodes, in the case of transmitting a RPR MAC frame into which a MAC frame is encapsulated and in which a MAC address of a bridge node corresponding to a destination MAC address of the MAC frame is set for a destination MAC address of thereof, sets a MAC address of the bridge node itself for a source MAC address of the RPR MAC frame, and

the station node and/or the bridge node and forwarding the RPR MAC frame into which the MAC frame transmitted from the bridge node is encapsulated, stores the mapping table with correspondence between a source MAC address of the RPR MAC frame and a source MAC address of the MAC frame within the RPR MAC frame.

6. (Currently Amended) A bridge node located, together with a plurality of station nodes terminating media access control (MAC) frames and another bridge node, in one or more ringlets constructing a resilient packet ring (RPR) network, comprising:

wherein the bridge node, in the case of receiving the MAC frame transmitted from a station being located in the outside of the ringlets and in which a MAC address of other station located in the outside of the ringlets and accommodated to other bridge node connected to the ringlets is set for a destination MAC address, transmits a RPR MAC frame into which the MAC frame is encapsulated in such a state that the other bridge node can capture the RPR MAC frame, and

the bridge node, in the case of receiving a MAC frame in which a MAC address of a station node is set for a destination MAC address from the station, converts the MAC frame into a RPR MAC frame and transmits the RPR MAC frame

a receiving unit operable to receive a MAC frame from a station located on outside of the ringlets;

a determining unit operable to determine whether a destination MAC address of the MAC frame received by the receiving unit indicates a MAC address of another station accommodated to the other bridge node or a MAC address of one of the plurality of station nodes;

a transmitting unit operable to transmit to the other bridge node an RPR MAC frame into which the MAC frame is encapsulated in such a state that the other bridge node can capture the RPR MAC frame if the destination MAC address indicates the MAC address of the other station, and operable to transmit to the one of the plurality of station nodes an RPR MAC frame obtained by conversion of the MAC frame if the destination address indicates the MAC address of the one of the plurality of station nodes.

7. (Original) A bridge node according to claim 6, wherein the bridge node has a table registered with MAC addresses of all the station nodes and bridge nodes connected to the ringlets, and the bridge node, in the case of forwarding a MAC frame received from the station, converts the MAC frame into a RPR MAC frame and transmits the RPR MAC frame if a destination MAC address of the MAC frame is registered in the table, and transmits a RPR MAC frame into which the MAC frame is encapsulated if the destination MAC address of the MAC frame is not registered in the table.

8. (Original) A bridge node according to claim 7, wherein the bridge node further has a mapping table stored with correspondence between the MAC addresses of the bridge nodes and a MAC address of a station located in the outside of the ringlets and accommodated to the bridge nodes, and

the bridge node, in the case of transmitting a RPR MAC frame into which a MAC frame is encapsulated, if a MAC address of a bridge node corresponding to a destination MAC address of the MAC frame is stored in the mapping table, sets the MAC address of the bridge node for a destination MAC address of the RPR MAC frame.

9. (Original) A bridge node according to claim 8, wherein the bridge node retains a multicast address that all the plurality of bridge nodes belong to a group of the multicast address, and

the bridge node, in the case of transmitting a RPR MAC frame into which a MAC frame is encapsulated, if a MAC address of a bridge node corresponding to a destination MAC address

of the MAC frame is not stored in the mapping table, sets the multicast address for a destination MAC address of the RPR MAC frame.

10. (Original) A bridge node according to claim 8, wherein the bridge node, in the case of forwarding a RPR MAC frame transmitted from other bridge node, wherein the RPR MAC frame has a encapsulated MAC frame, has a MAC address of a bridge node corresponding to a destination MAC address of the encapsulated MAC frame as a destination MAC address thereof, and has a MAC address of other bridge node as a source MAC address thereof, stores the mapping table with correspondence between the source MAC address of the RPR MAC frame and the source MAC address of the encapsulated MAC frame.

11. (Currently Amended) A station node located, together with a plurality of bridge nodes forwarding a media access control (MAC) frame and another station node, is on one or more ringlets constructing a resilient packet ring (RPR) network, comprising:

~~— wherein the station node, in the case of transmitting a MAC frame transmitted to other station node connected to the ringlets, transmits a RPR MAC frame in which a MAC address of the other station node is set for a destination MAC address, and~~

~~— the station node, in the case of transmitting a MAC frame to a station accommodated to a bridge node and located in the outside of the ringlets, transmits a RPR MAC frame into which the MAC frame is encapsulated in such a state that the bridge node can capture the RPR MAC frame~~

a determining unit operable to determine, upon transmitting a MAC frame, whether a destination of the MAC frame is the other station node or a station located on outside of the ringlets and accommodated to one of the plurality of bridge nodes; and

a transmitting unit operable to transmit to the other station node an RPR MAC frame obtained by conversion of the MAC frame and having a destination MAC address indicating the other station node if the destination is the other station node, and operable to transmit to the one of the plurality of bridge nodes an RPR MAC frame into which the MAC frame is encapsulated in such a state that the one of the plurality of bridge nodes can capture the RPR MAC frame if the destination is the station so that the one of the plurality of bridge nodes captures the RPR MAC frame to transmit to the other station the MAC frame in the RPR MAC frame.

12. (Original) A station node according to claim 11, wherein the station node has a table registered with MAC addresses of all the station nodes and bridge nodes connected to the ringlets, and

the station node, in the case of transmitting a MAC frame, converts the MAC frame into a RPR MAC frame and transmits the RPR MAC frame if a destination MAC address of the MAC frame is registered in the table, and transmits a RPR MAC frame into which the MAC frame is encapsulated if the destination MAC address of the MAC frame is not registered in the table.

13. (Original) A station node according to claim 12, wherein the station node further has a mapping table stored with correspondence between a MAC address of each bridge node and a MAC address of a station accommodated to each bridge node and located in the outside of the ringlets, and

the station node, in the case of transmitting a RPR MAC frame into which a MAC frame is encapsulated, if a MAC address of a bridge node corresponding to a destination MAC address of the MAC frame is stored in the mapping table, sets the MAC address of the bridge node for a destination MAC address of the RPR MAC frame.

14. (Original) A station node according to claim 13, wherein the station node retains a multicast address that all the bridge nodes belong to a group of the multicast address, and

the station node, in the case of transmitting a RPR MAC frame into which a MAC frame is encapsulated, if a MAC address of a bridge node corresponding to a destination MAC address of the MAC frame, sets the multicast address for a destination MAC address of the RPR MAC frame.

15. (Original) A station node according to claim 13, wherein the station node, in the case of forwarding a RPR MAC frame transmitted from other bridge node, wherein the RPR MAC frame has a encapsulated MAC frame, has a MAC address of a bridge node corresponding to a destination MAC address of the MAC frame as a destination MAC address thereof, and has a MAC address of other bridge node as a source MAC address thereof, stores the mapping table with correspondence between the source MAC address of the RPR MAC frame and the source MAC address of the encapsulated MAC frame within the RPR MAC frame.

16. (Currently amended) A resilient packet ring (RPR) card installed into a bridge node located, together with a plurality of station nodes terminating a media access control (MAC) frame and another bridge node, ~~in~~ on one or more ringlets constructing a RPR network, comprising:

wherein the RPR card, in the case of receiving a MAC frame transmitted from a station located in the outside of the ringlets, wherein the MAC frame has a MAC address of other station located in the outside of the ringlets and accommodated to other bridge node on the ringlets as a destination MAC address thereof, transmits a RPR MAC frame into which the MAC frame is encapsulated in such a state that the other bridge node can capture the RPR MAC frame, and
—— the RPR card, in the case of receiving a MAC frame in which a MAC address of a station node is set in a destination MAC address from the station, converts the MAC frame into a RPR MAC frame and transmits the RPR MAC frame

a receiving unit operable to receive a MAC frame from a station located on outside of the ringlets;

a determining unit operable to determine whether a destination MAC address of the MAC frame received by the receiving unit indicates a MAC address of another station accommodated to the other bridge node or a MAC address of one of the plurality of station nodes;

a transmitting unit operable to transmit to the other bridge node an RPR MAC frame into which the MAC frame is encapsulated in such a state that the other bridge node can capture the RPR MAC frame when the destination MAC address indicates the MAC address of the other station, and to transmit to the one of the plurality of station nodes an RPR MAC frame obtained by conversion of the MAC frame when the destination address indicates the MAC address of the one of the plurality of station nodes.

17. (Original) A RPR card according to claim 16, wherein the RPR card has a table registered with correspondence between MAC addresses of all the station nodes and bridge nodes connected to the ringlets, and

the RPR card, in the case of forwarding a MAC frame received from the station, converts the MAC frame into a RPR MAC frame and transmits the RPR MAC frame if a destination MAC address of the MAC frame is registered in the table, and transmits a RPR MAC frame into which the MAC frame is encapsulated if the destination MAC address of the MAC frame is not registered in the table.

18. (Original) A RPR card according to claim 17, wherein the RPR card further has a mapping table stored with correspondence between a MAC address of each bridge node and a MAC address of a station located in the outside of the ringlets and accommodated to each bridge node, and

the RPR card, in the case of transmitting a RPR MAC frame into which a MAC frame is encapsulated, if a MAC address of a bridge node corresponding to a destination MAC address of the MAC frame is stored in the mapping table, sets the MAC address of the bridge node for a destination MAC address of the RPR MAC frame.

19. (Original) A RPR card according to claim 18, wherein the RPR card retains a multicast address that all the bridge nodes on the ringlets belong to a group of the multicast address, and

the RPR card, in the case of transmitting a RPR MAC frame into which a MAC frame is encapsulated, if a MAC address of a bridge node corresponding to a destination MAC address of the MAC frame is not stored in the mapping table, sets the multicast address for a destination MAC address of the RPR MAC frame.

20. (Original) A RPR card according to claim 18, wherein the RPR card, in the case of forwarding a RPR MAC frame transmitted from other bridge node, wherein the RPR MAC frame has a encapsulated MAC frame therein, has a MAC address of a bridge node corresponding to a destination MAC address of the MAC frame as a destination MAC address thereof, and has a MAC address of the other bridge node as a source MAC address thereof, stores the mapping table with correspondence between the source MAC address of the RPR MAC frame and a source MAC address of the encapsulated MAC frame within the RPR MAC frame.

21. (Previously Presented) A media access control (MAC) frame forwarding method for a bridge node located, together with a plurality of station nodes terminating MAC frames, in one or more ringlets constructing a resilient packet ring (RPR) network, said method comprising:

transmitting, in the case of receiving a MAC frame from a station, which is located in the outside of the ringlets, and in which a MAC address of other station, which is located in the outside of the ringlets and is accommodated to other bridge node connected to the ringlets, is set for a destination MAC address, a RPR MAC frame into which the MAC frame is encapsulated in such a state that the other bridge node can capture the RPR MAC frame; and

converting, in the case of receiving a MAC frame from the station in which a MAC address of a station node is set for a destination MAC address, the MAC frame into a RPR MAC frame and transmitting the RPR MAC frame.

22. (Previously Presented) A MAC frame forwarding method for a resilient packet ring (RPR) card installed into a bridge node located, together with a plurality of station nodes terminating

media access control (MAC) frames, in one or more ringlets constructing a RPR network, said method comprising:

transmitting, in the case of receiving a MAC frame from a station, which is located in the outside of the ringlets, and in which a MAC address of other station, which is located in the outside of the ringlets and is accommodated to other bridge node connected to the ringlets, is set for a destination MAC address thereof, a RPR MAC frame into which the MAC frame is encapsulated in such a state that the other bridge node can capture the RPR MAC frame, and

converting, in the case of receiving a MAC frame from the station in which a MAC address of a station node is set for a destination MAC address, the MAC frame into a RPR MAC frame and transmitting the RPR MAC frame.